

DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
WESTERN REGIONAL OFFICE

Branch of Environmental Management

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Fax

To: Marcie Phillips

From: John Krause

Fax: 209-759-3104

Pages: 12

Phone: _____

Dates: EIA Region 9

Re: _____

Cc: Elizabeth Jones (WTK-9)

415-947-3549

☐ Urgent

☒ For Review

☒ Please Comment

☒ Please Reply

☒ Comments: Proposed and funded work for FY 07



August 4, 2006

Mr. John Krause
US Department of the Interior
Bureau of Indian Affairs
Phoenix Area Office
400 N. 5th Street
Phoenix, Arizona 85004

RE: Proposal for Additional Groundwater Monitoring Wells and
2006 Semi-Annual Groundwater Monitoring, Sampling, and Reporting
Duck Valley Indian Reservation
Owyhee, Nevada

Dear Mr. Krause:

Pursuant to your request, SECOR International Incorporated (SECOR) has prepared a proposal for the installation of 14 groundwater monitoring wells, the abandonment of 7 monitoring wells and 2 former municipal wells (#1 and #2), and semi-annual groundwater monitoring for 2006 and 2007 at the Duck Valley Indian Reservation in Owyhee, Nevada. The purpose of the additional wells is to identify all potential sources of petroleum hydrocarbons and trichloroethylene (TCE), and fully delineate the upgradient and down gradient plumes of these chemicals in the groundwater. The semi-annual groundwater monitoring and sampling will be conducted to comply with EPA requirements for monitoring chemical contaminants in groundwater resulting from a release. Data will also be collected to assess natural attenuation.

In addition to this work, SECOR will complete the previously authorized task of performing a slug test and aquifer pump test in order to gather the information necessary to develop a remediation system design for the site. Preparation of the system design was also previously authorized and a work plan with an explanation of the slug and pump tests was submitted to the Bureau of Indian Affairs in November 2005.

Site Description

The Duck Valley Reservation is located north of Elko, Nevada, and just south of the Idaho-Nevada border on Nevada State Highway 225, which turns into Idaho State Highway 51 at the Idaho-Nevada state line. There are currently 14 groundwater monitoring wells (MW-1 to MW-4 and MW-6 to MW-15) located within central Owyhee, and three monitoring wells (MW-16 to MW-18) located at the former Indian Health Services (IHS) hospital at the north end of town. Monitoring well MW-5 collapsed and is no longer useable for groundwater monitoring.

SECOR INTERNATIONAL INCORPORATED
1535 Old Hot Springs Road, Suite 3, Carson City, Nevada 89706
(775) 884-4561 ~ (775) 884-4555 fax



A site plan included as **Figure 1** for your reference depicts the location of former structures. The current site configuration along with the proposed wells and wells to be abandoned is attached in **Figure 2**.

Site Background and Previous Investigations

In February 1985, 8,000 gallons of heating oil were delivered to a 16,000-gallon above-ground storage tank (AST), located approximately 75 feet east of Highway 225 near an old power plant. Five days later and before the 8,000 gallons should have been consumed, the tank was empty, suggesting that the pipelines that carried fuel to consumers had substantial leaks. Use of the heating oil pipeline was discontinued in 1985, and the 16,000-gallon AST continued to be used to store fuel, which was transferred by truck to individual ASTs.

In October 1987, an oil-like odor was discovered in two municipal wells that were subsequently taken out of service. In March 1998, the Indian Health Services (IHS) reported that the Owyhee public water contained a petroleum-like taste. The Shoshone-Paiute Tribe (Tribe) conducted nine test pit excavations to depths 12 to 15 feet below the ground surface (bgs) at locations to the east, west and north of the Tribal maintenance building. Free-phase hydrocarbons (FPH) were observed on the groundwater surface in two test pits to the north of the Tribal Maintenance Building between the building and public water Wells #1 and #3. Soil was excavated along the buried pipeline north of the Tribal Maintenance building to groundwater, and FPH were encountered beneath pipeline fittings. Soil samples obtained from underneath the pipeline contained concentrations of total petroleum hydrocarbons in the diesel range (TPHd) from 11,000 to 12,000 milligrams per kilogram (mg/kg).

In March 1988, a 12,000-gallon underground storage tank (UST) located on the east side of the Road Shop building and a 12,000-gallon UST located south of the former power plant (east of the highway) were removed. Both USTs were used for storing diesel, and neither UST was connected to the town site distribution pipeline. No hydrocarbon-impacted soil was reported from either excavation, and no soil test data was available from this activity. Sometime during 1989, a former 1,000-gallon AST containing gasoline located at the northeast corner of the Road Shop yard was vandalized. It was estimated that between 200 to 800 gallons of gasoline were released to the ground surface. Numerous other USTs have been removed throughout Duck Valley between 1989 and the present time.

During the installation of a water line in November 1995, approximately sixty feet of pipeline was removed northeast of the Tribal Maintenance Building near the intersection of "L" and "C" Streets. Soils in the vicinity of the line were reported to be impacted with heating oil.

In 1999, Cherokee General Corporation and SECOR removed the majority of the remaining heating oil pipeline and significant quantities of hydrocarbon-impacted soils where feasible. SECOR also conducted a subsurface investigation to estimate the remaining impact to soil and groundwater, and characterized the hydrogeology of the site. The results from the investigation suggest that four major releases (Locations 1



through 4, below) and two moderate releases (Locations 5 and 6, below) of petroleum products had occurred. Their locations were:

- (1) Along the heating oil pipeline east of Highway 225;
- (2) At a former heating oil UST, 200 feet west of Highway 225;
- (3) At a 90 degree turn in the pipeline, 475 feet west of Highway 225 at the intersection of "L" Street and "C" Street;
- (4) Along the pipeline near the ASTs in the northeast corner of the Tribal Maintenance Yard;
- (5) At a former UST location in the northern area of town near the jail; and
- (6) At the discharge pipe outlet in the Bureau of Indian Affairs (BIA) Road Shop Yard.

Of these releases, four of them (Locations 2 through 5) appeared to have impacted groundwater in the area of the release and northwest of the release. Evidence of groundwater impact in these four areas consisted mainly of TPHd, although groundwater down-gradient from the Tribal Maintenance Yard release (Location 4) contained both TPHd and total petroleum hydrocarbons in the gasoline range (TPHg). Groundwater was not encountered during excavation in the area of Location 1, and the rocky subsurface prohibited water sample collection; it is therefore not known whether groundwater in this area was impacted. Groundwater samples collected in the area surrounding the discharge pipe outlet (Location 6) indicate that groundwater was not impacted.

Numerous other areas where petroleum releases occurred along the pipeline and at former storage tank locations were investigated by SECOR in 1999 and mitigated through soil removal. Relatively shallow subsurface soils that were impacted with petroleum products by past activities (e.g., equipment storage) at the Road Shop area were also excavated and removed. In total, approximately 2,850 cubic yards (yd³) of impacted soil were removed from throughout the site. Of the nearly 30 areas excavated during this investigation, total petroleum hydrocarbon (TPH) impacted soils remained in 18 of the areas. These areas were located where structures, roads or utilities prevented further excavation, or where the amount of clean soils overlying impacted areas made the removal of the soils cost prohibitive.

In the fall of 2000, Steffen, Robertson & Kirsten Consultants (SRK) advanced and sampled 21 soil borings, 18 of which were converted to groundwater monitoring wells. The analytical data from samples collected during the installation of the wells provided further evidence that soils and groundwater in the areas delineated in 1999 were impacted with TPH. During the November 2000 sampling event, groundwater samples from the wells were analyzed for TPH-g, volatile organic compound (VOCs), semi-volatile organic compounds (SVOCs) and the eight metals identified by the Resource Conservation and Recovery Act (RCRA) as hazardous (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The VOC and SVOC analyses provided an indication of the concentration of degraded TPHd components and solvent constituents in the groundwater, but did not provide TPHd concentrations. No metal concentrations were detected in the groundwater samples and all VOC concentrations



reported were below the Federal primary drinking water standards. Samples from well MW-5 were also analyzed for pesticides and herbicides because of reported historic improper disposal of these compounds in the vicinity of the well. No pesticides or herbicides were detected in the samples.

SRK also provided oversight for the removal of two USTs and one AST from the former IHS Hospital site during their investigation. Only non-native backfill soils were removed from the UST basin, and soil samples collected from native soils in the excavation had TPHd concentrations ranging from 560 mg/kg to 6,100 mg/kg. Three monitoring wells were installed in the vicinity of the hospital (MW-16, -17 and -18). Low concentrations of naphthalene, a degradation product of TPHd, were detected in each of the three wells.

In 2002, the BIA contracted Western Construction Incorporated (Western) to begin grading and paving roads throughout Duck Valley. While the roads were under construction, SECOR supervised Western during the excavation of TPH-impacted soils from beneath the roads where impacted soils had been left during the 1999 investigation. During this investigation, approximately 1,932 yd³ of TPH-impacted soil were excavated from beneath roads. The total volume of soils excavated was comprised of 1,348 yds³ from the area near the intersection of "L" Street and "C" Street; 560 yd³ from the area along the pipeline near the ASTs in the northeast corner of the Tribal Maintenance Yard; and 24 yds³ from approximately 50 feet west of Highway 51 along the northern edge of "D" Street.

Residual Soil Impacts

TPH-impacted soil remains in the ground in the area between "L" and "N" Streets and wells MW-13 and MW-16 along utility corridors, beyond the street right-of-ways and throughout the soil/water interface (capillary fringe). Soil in the vicinity of well MW-10 on the east and west sides of Highway 225 is impacted with TPHd.

Groundwater Monitoring

SECOR personnel monitored and sampled 17 monitoring wells for four quarters between September 2004 and June 2005. The depth to water and analytical results from these events and the four previous events are presented in **Table 1** (attached).

The June 2005 analytical data indicated that groundwater in the area encompassing wells MW-6, MW-8, MW-11 and MW-13 continues to have TPHg concentrations ranging from 0.54 to 2.0 milligrams per liter (mg/L) and TPHd concentrations from 1.3 to 67 mg/L (**Table 1; Figure 2**).

TCE was first detected in monitoring well MW-10 during the September 2002 sampling event. The observed TCE concentration has remained relatively stable, ranging from 1.2 to 1.6 µg/L over the entire period of groundwater monitoring, although no TCE analysis was conducted during the June 2005 sampling event. The EPA Region 9 preliminary remediation goal (PRG) for Tap Water is 0.028 micrograms per liter (µg/L).



Historically groundwater samples collected from site wells have been analyzed for TPHd, TPHg, SVOCs and BTEX. SVOC analysis was discontinued in wells that have not historically exhibited concentrations of these compounds. Speciation of BTEX compounds (via EPA Method 8260) was discontinued after the results of the March 2005 sampling event because they were below the MCLs and Region 9 PRGs.

Site Hydrogeology

The depth to groundwater within the main part of town ranged from 2.97 feet to 13.94 feet bgs, averaging 6.43 feet bgs, during the June 2005 sampling event. The depth to groundwater at the three monitoring wells located at the old hospital building at the north end of the town ranged from 4.42 to 9.91 feet bgs. The overall hydraulic gradient in the main part of Owyhee was calculated at 0.006 feet per foot (ft/ft) from triangulation using monitoring wells MW-7, MW-9 and MW-15. The direction of groundwater flow is to the northwest in this area. The groundwater flow direction in the vicinity of the old hospital was determined to be to the northwest at a gradient of 0.054 ft/ft as determined from triangulation between monitoring wells MW-16, MW-17 and MW-18. A trough-like feature in the potentiometric surface has been observed in the main town site during past well gauging events, and is still present with a northwest to southeast trend.

SCOPE OF WORK

Installation of Additional Groundwater Monitoring Wells

At your request, 14 additional groundwater monitoring wells will be installed throughout Owyhee to delineate hydrocarbon sources and the dissolved hydrocarbon plume. The proposed well locations are presented on **Figure 2**. The wells labeled 12 and 13 on the map will be installed close enough to well MW-13 to provide valuable data during the pump test. Each well will be installed using a hollow stem auger drill rig. At the terminal depth of each boring (approximately 20 feet bgs), groundwater monitoring wells will be constructed within each boring by installing a 2-inch diameter, flush-threaded, Schedule 40 polyvinyl chloride (PVC) casing with a 15-foot 0.020-inch machine slotted PVC well screen set from approximately 5 to 15 feet bgs. A sand filter pack will be placed in the annular space surrounding the screen, and extend approximately 1 foot above the top of the screen. A 3-foot thick bentonite annular seal will be placed above the filter pack, followed by cement to just below ground surface. The wellheads will be completed at the ground surface with lockable compression-type well caps and flush-mounted, traffic-rated locking well vaults with bolt-down lids.

Soil samples will be collected at five-foot intervals during the advancement of the soil borings. Soil samples will be classified according to the Unified Soil Classification System (USCS), and physical soil characteristics (i.e., moisture content, consistency, odor, color, etc.), drilling difficulty, sample recovery, and soil type will be noted. In addition, the presence of volatile organic compounds in the extracted soil sample will be measured using a photo-ionization detector (PID) or flame ionization detection (FID) calibrated daily. Based on observed field conditions and field instrumentation, selected soil samples may be submitted to an analytical laboratory for chemical analyses. Information gathered during soil boring activities will be recorded on the boring logs. Soil



cuttings and waste water generated during drilling will be temporarily stored on-site in 55-gallon drums pending final disposition.

Following installation, each well will be developed by purging and bailing water from the well to remove accumulated sediment from the filter pack. The newly installed wells will be surveyed relative to the same benchmark as the existing wells. SECOR will prepare a well installation report summarizing field activities and soil analytical results for submittal to the BIA. The newly installed wells will be included in the semi-annual groundwater monitoring, sampling and report program for 2006, as outlined below.

Well Abandonment

SECOR will select a subcontractor and provide oversight for plugging and abandoning monitoring wells MW-1 through MW-5, MW-16 and MW-18 and former municipal wells #1 and #2, if these two wells have not been previously abandoned. In accordance with Nevada Division of Water Resources requirements (NAC 534.4365), the wells will be pressure grouted with a neat cement/bentonite grout through a tremie pipe in an upward direction from the bottom of the well to within five feet of the ground surface. The top five feet of the well casing will then be drilled out, and the remainder of the boring will be filled with grout to the ground surface. All materials that are generated during the well abandonment will be accumulated in sealed 55-gallon drums and transferred to an appropriate receiving facility pending analytical results of a 4:1 composite sample collected from the drums.

Semi-Annual Groundwater Monitoring and Sampling

SECOR proposes to conduct groundwater monitoring and sampling from 25 groundwater monitoring wells during one event in 2006 and two events in 2007. Each sample will be analyzed for TPHg and TPHd (TPH) by EPA Method 8015B. Samples from MW-10 and the additional 3 new wells near MW-10 will be analyzed for TCE by EPA method 8260.

Health and Safety

SECOR will develop a new site-specific health and safety plan (HASP) prior to conducting field work. There will be a SECOR-led safety meeting at the start of every work day and after lunch to review the HASP. Attendance at these meetings will be required of all people working at the site. SECOR will also review the health and safety and equipment records of all subcontractors to ensure that they meet SECOR's rigid requirements. If a subcontractor cannot provide evidence of compliance with SECOR's health and safety requirements, they will not be involved with this project.

Bid Solicitation

SECOR will develop requests for proposals and solicit bids from a minimum of three contractors for the installation and abandonment of the monitoring wells and Wells #1



and #2. It is anticipated that two subcontractors will be required for the site closure: one to plug and abandon the wells, and another to excavate and remove all piping and equipment and restore the site to pre-remediation conditions.

Reporting

SECOR will prepare one summary report at the end of each calendar year or at the time you specify. The reports will include an interpretation of all monitoring and sampling data and provide figures and graphs depicting the site conditions. SECOR will also acquire Affidavits of Abandonment from the Nevada Division of Environmental Protection for each of the wells to be abandoned.

Cost Estimate

The total cost for the scopes of work outline herein are presented in **Table 2**, and are based on the EPA requirements as SECOR understands them. SECOR can begin implementation of this project upon execution of a Notice to Proceed.

We are pleased to provide this proposal for your review and consideration. Please feel free to contact me at (775) 884-4561, Extension 225, if you have any questions regarding this project. I look forward to working with you.

Regards,

SECOR International Incorporated

Todd Leonard, CEM
Senior Scientist

cc: John Graves, BIA, Phoenix Area Office
Project files

Attachments: Figure 1 – Historical Site Plan
Figure 2 – Well Location and Concentration Map
Table 1 – Groundwater Analytical Data
Table 2 – Cost Estimate

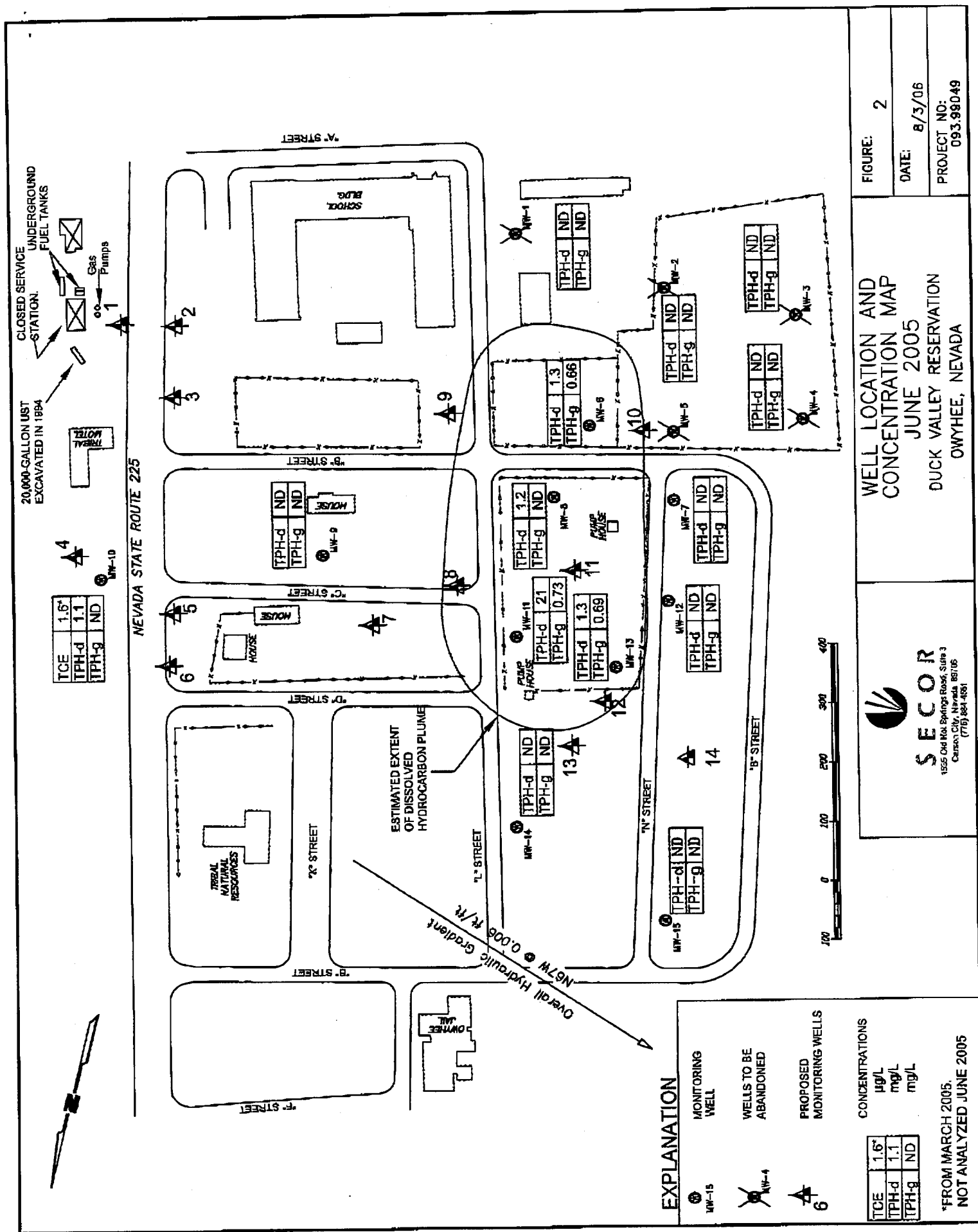


Table 1
Groundwater Analytical Data
Duck Valley Reservation, Owyhee, Nevada
November 2000 through June 2005

[illegible]

Table 1
Groundwater Analytical Data
Duck Valley Reservation, Owyhee, Nevada
November 2000 through June 2005

November 2001 through June 2005												
Watershed	11/22/2001	11/22/2002	11/22/2003	11/22/2004	11/22/2005	11/22/2006	11/22/2007	11/22/2008	11/22/2009	11/22/2010	11/22/2011	11/22/2012
MW-11 (5387.76)	11/22/2001	11.17	5385.93	0.05	NA	NA	NA	NA	NA	NA	<25.0	<25.0
	9/6/2002	10.36	5386.8	4.9	50	NA	NA	NA	NA	NA	<1.0	<1.0
	9/27/2004	10.57	5386.59	2.0	57	<100.0	<100.0	<100.0	<100.0	<1.0	<1.0	<1.0
	11/8/2004	11.50	5385.98	1.3	14	NA	NA	NA	NA	NA	<1.0	<1.0
	3/3/2006	11.69	5385.47	1.6	68	NA	NA	NA	NA	NA	<1.0	<1.0
MW-12 (5397.98)	6/22/2005	6.18	5380.98	0.73	21	<20.0	<20.0	<20.0	<20.0	NA	NA	NA
	11/22/2009	11.80	5386.18	<0.04	NA	NA	NA	NA	NA	NA	<1.0	<1.0
	9/5/2002	10.68	5387.10	<0.50	<0.50	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/27/2004	11.45	5386.53	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	11/8/2004	12.18	5386.79	<0.50	<0.50	NA	NA	NA	NA	NA	<1.0	<1.0
MW-13 (5388.13)	3/3/2005	12.42	5385.55	<0.50	<0.50	NA	NA	NA	NA	NA	<1.0	<1.0
	6/22/2005	7.48	5380.50	<0.50	<0.50	NA	NA	NA	NA	NA	NA	NA
	11/22/2009	12.28	5385.87	0.03	NA	NA	NA	NA	NA	<5.0	<5.0	<5.0
	9/6/2002	11.59	5386.74	1.1	0.94	NA	NA	<1.0	<1.0	<1.0	1.1	<1.0
	9/27/2004	11.62	5386.31	0.54	1.3	<10.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-14 (5398.35)	11/8/2004	12.60	5385.83	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	3/3/2005	12.53	5385.3	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	6/22/2005	7.91	5380.22	0.69	1.3	<10.0	<10.0	<1.0	<1.0	NA	NA	NA
	11/22/2009	11.18	5387.47	<0.02	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/6/2002	10.28	5388.07	<0.50	<0.50	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
MW-15 (5394.44)	9/27/2004	10.81	5387.84	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
	11/8/2004	11.88	5386.47	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	3/3/2005	12.15	5386.20	<0.50	<0.50	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	6/22/2005	8.94	5391.41	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	NA	NA	NA
	11/22/2009	10.08	5384.36	<0.02	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
MW-16 (5441.19)	9/6/2002	9.03	5385.41	<0.50	<0.50	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/27/2004	9.15	5385.28	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
	11/8/2004	10.03	5384.41	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	3/3/2005	10.28	5384.16	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	6/22/2005	6.30	5388.14	<0.50	<0.50	NA	NA	NA	NA	NA	NA	NA
MW-17 (5440.85)	11/22/2009	25.38	5416.81	0.03	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/6/2002	13.92	5427.27	<0.50	<0.50	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/27/2004	14.87	5426.32	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
	11/8/2004	15.24	5426.95	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	3/4/2005	15.23	5426.95	<0.50	<0.50	NA	NA	<1.0	<1.0	NA	NA	NA
MW-18 (5427.49)	6/3/2005	12.91	5428.28	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	NA	NA	NA
	11/22/2009	18.37	5422.48	0.05	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/6/2002	11.23	5429.62	<0.50	0.96	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/27/2004	11.76	5429.09	<0.50	1.40	<20.0	140	<2.0	<1.0	<1.0	<1.0	<1.0
	11/8/2004	12.29	5428.56	<0.50	0.81	<10.0	<10.0	NA	<1.0	<1.0	<1.0	<1.0
MW-19 (5427.49)	3/4/2005	9.76	5431.09	<0.50	0.85	NA	NA	NA	NA	<1.0	<1.0	<1.0
	6/3/2005	9.81	5430.94	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	NA	NA	NA
	11/22/2009	15.58	5411.92	0.05	NA	NA	NA	<1.0	<1.0	<1.0	<1.0	<1.0
	9/6/2002	7.35	5420.13	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	9/27/2004	7.03	5420.45	<0.50	<0.50	<10.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-20 (5427.49)	11/8/2004	6.03	5421.45	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	3/4/2005	5.45	5422.63	<0.50	<0.50	NA	NA	NA	NA	<1.0	<1.0	<1.0
	6/3/2005	4.42	5423.08	<0.50	<0.50	<10.0	<10.0	NA	NA	NA	NA	NA
EPA Region 9			NIE	NIE				0.02%	0.35	720	1,300	210

mg/L = milligrams per liter (ppm)
 µg/L = micrograms per liter (ppb)
 mg/Stm = milligramm/Strommeter
 TP10 = Total Petroleum Hydrocarbons as Gasolins
 TP10 = Total Petroleum Hydrocarbons as diesel
 TCE = Trichlorethene
 1,1,1-Trichloroethane @3.121
 ** = eratic/unreliable instrument readings due to wa

NS = Not Sampled
NE = The regulatory standard for this constituent has not been established.
BOLD value indicates a concentration greater than detection limit.
SHADED value indicates a concentration that exceeds the regulatory standard.
September 2004 parameters measured using Horiba Multi-merer Vogel U-22
November 2004 parameters measured using Hydac T pH cond. Meter
(rainy weather caused periodic instrument malfunctions)

TABLE 2. COST ESTIMATE FOR GROUNDWATER MONITORING AND SAMPLING AND WELL INSTALLATION AND ABANDONMENT

Labor Category	Labor Rate	Units	Task 1 Semi-Annual Groundwater Monitoring & Sampling		Task 2 Reporting		Task 3 Additional Well Installation		Task 4 Well Abandonment		Task 5 Slug Test, Pump Test and Remediation System Design		TOTALS	
			Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs
Principal	\$135.00	hour	2	\$270	1	\$135	4	\$540	1	\$135			8	\$1,080
Senior	\$115.00	hour	12	\$1,380	20	\$2,300	20	\$2,300	8	\$920			60	\$6,900
Associate	\$100.00	hour	6	\$600	8	\$800	50	\$5,000	8	\$800			72	\$7,200
Staff	\$70.00	hour	120	\$8,400	40	\$2,800	160	\$11,200	40	\$2,800			360	\$25,200
Draftsperson	\$60.00	hour		\$0	16	\$960		\$0	4	\$240			20	\$1,200
Clerical	\$55.00	hour	2	\$110	8	\$440	12	\$660	4	\$220	Per Previously Approved Budget		26	\$1,430
Total Labor Costs				\$10,490		\$7,300		\$19,160		\$4,980		\$39,768		
Direct Expenses	Rate	Units	Quantity		Quantity		Quantity		Quantity		Quantity		Quantity	
			Quantity	Costs	Quantity	Costs	Quantity	Costs	Quantity	Costs	Quantity	Costs	Quantity	Costs
Mileage	\$0.51	mile	1248	\$636	0	\$0	1248	\$636	0	\$0			2496	\$1,273
Barricades	\$140	day	6	\$840	0	\$0	8	\$1,120	0	\$0			14	\$1,960
Drilling Subcontractor	\$87,666	event	0	\$0	0	\$0	1	\$87,666	1	\$0			2	\$67,666
Abandonment Subcontractor	\$12,000		0	\$0	0	\$0	1	\$0	1	\$12,000			2	\$12,000
Water Analyses (TPH/TPH/d)	\$110	each	75	\$8,250	0	\$0	0	\$0	0	\$0			75	\$8,250
Water Analyses (VOCs 8260)	\$150	each	12	\$1,800	0	\$0	0	\$0	0	\$0			12	\$1,800
Soil Analyses (TPH/TPH/d)	\$110	each	0	\$0	0	\$0	20	\$3,080	0	\$0			28	\$3,080
Soil Analyses (VOCs 8260)	\$150	each	0	\$0	0	\$0	3	\$450	0	\$0			3	\$450
Natural Attenuation (water)	\$85	each	25	\$2,375	0	\$0	0	\$0	0	\$0			25	\$2,375
Photoionization detector	\$100	day	0	\$0	0	\$0	20	\$2,000	0	\$0			20	\$2,000
Waste transport & disposal (soil)	\$200	drum	40	\$8,000	0	\$0	12	\$2,400	20	\$800			72	\$11,200
Bailers	\$10	each	75	\$750	0	\$0	0	\$0	0	\$0			75	\$750
Meters (Eh, DO, pH, cond., temp)	\$100	day	12	\$1,200	0	\$0	0	\$0	0	\$0			12	\$1,200
Per Diem	\$110	day	12	\$1,320	0	\$0	0	\$0	40	\$4,400			52	\$5,720
Water Level Indicator	\$15	day	12	\$180	0	\$0	20	\$300	0	\$0			0	\$0
Total Expenses				\$26,351		\$0		\$77,652		\$13,280				\$115,284
Total Proposed Budget				\$35,841		\$7,300		\$96,812		\$18,260		\$39,768		\$198,002